

Response to Non-Final Office Action

Inventor(s): N. Takamori, *et al.*

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REMARKS

Claims 10-22 are pending in the application. Claims 10 and 14 are amended herein to correct obvious typographical errors and to more clearly define the claimed subject matter. No new matter has been added.

The Invention

The present invention provides optical data recording medium which are resistant to deformation (e.g., warp) due to changes in temperature. More particularly, the present invention provides optical data recording media in which the expansion coefficient of the protective film and the transparent substrate are regulated to prevent a bending force that can induce a warp or bend in the medium. The present inventors have surprisingly discovered that selecting the materials used in the protective layer and the transparent substrate provides superior thermal stability and reduced medium deformation.

The Office Action

Applicants note with appreciation that several of the previous grounds for rejection of the claims have been withdrawn.

Rejection under 35 U.S.C. §112

The Examiner has rejected claims 10-16 under 35 U.S.C. §112, second paragraph, as allegedly being indefinite. This rejection is traversed.

While Applicants do not consider the claims as previously pending to have been unclear, claims 10 and 14 have been amended as suggested by the Examiner to further clarify the subject matter claimed. Applicants respectfully contend that the claims as amended fully comply with the requirements of 35 U.S.C. §112. Reconsideration and withdrawal of the rejection is proper and the same is requested.

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Rejections under 35 U.S.C. §102

Applicants note with appreciation the Examiner's withdrawal of rejections based on certain of the previously-cited references. Applicants submit that such a withdrawal is appropriate; if the references do not disclose the composition with specificity, then it cannot be said that all elements of the presently-claimed invention are necessarily present in the reference; thus, an argument that such reference teachings inherently anticipate the claims must fail.

In the Office Action, claims 10-16 were rejected under 35 U.S.C. §102(b) as being allegedly anticipated by Yokoyama (U.S. Patent 5,714,222). The rejection is traversed.

As the document is understood, Yokoyama teaches an optical recording medium which uses epoxyacrylate resin or urethane acrylate resins to form protective layers. Yokoyama does not describe the expansion properties of any layer of the recited overcoating and more particularly does not teach or suggest controlling the warp or tilt of the optical recording media by modulating the linear expansion coefficient of one or more of the layers constituting the optical recording media.

The Yokoyama reference, whether considered alone or in combination with other cited references, does not teach or suggest preventing thermally induced deformation or warping of an optical media comprising a transparent substrate, a thin film layer formed on the transparent substrate and a protective film by regulating the linear expansion coefficient of the transparent substrate and the protective layer as specified in claims 10 and 14 (as pending). More particularly, none of the cited documents, including Yokoyama, teach or suggest preventing thermal deformation of an optical recording media by selecting the transparent substrate and the protective layer such that the linear expansion coefficient of the protective film is greater than 9.5×10^{-5} (1/ $^{\circ}$ C) and smaller than 5.0×10^{-4} (1/ $^{\circ}$ C) and that the protective layer has a larger linear expansion coefficient than the transparent substrate. Yokoyama fails to teach or suggest

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that dimensionally stable optical recording media can be fabricated by controlling the ratio and magnitude of the linear expansion coefficient of the protective layer and the transparent substrate as recited in claims 10, 14 and 18.

In contrast, the claimed invention provides that the material of the protective layer has a linear expansion coefficient value greater than that of the transparent substrate and that the linear expansion coefficient of the protective layer is between 9.5×10^{-5} and 5.0×10^{-4} ($1/\text{ }^{\circ}\text{C}$). As disclosed by the present specification, optical data recording media which satisfy the above requirements are particularly resistant to deformation or warpage caused by changes in temperature.

It is well-established that a claim is anticipated only if each and every element or feature of a claim is expressly or inherently described in a single prior art reference. See, e.g., MPEP 2131. For a reference to inherently disclose a feature not expressly disclosed, extrinsic evidence can be used to supply the missing feature only if the extrinsic evidence “make[s] clear that the missing descriptive matter is *necessarily present* in the thing described in the reference and that it would be so recognized by persons of ordinary skill in the art. Inherency, however, may not be established by probabilities or possibilities.” MPEP 2112(IV), citing *In re Robertson*, 169 F.3d 743, 745 (Fed. Cir. 1999) (citations omitted) (emphasis added).

The Examiner states that “the composition [of Yokoyama] is specifically described and is a member of the class of adhesives described by the applicant as useful [in the present specification].” The Examiner apparently has taken the position that the data previously provided by Applicants relates to compositions other than those disclosed in Yokoyama “and therefore have a limited impact on the rejection at hand.” See, e.g., Office Action at page 4.

Applicants respectfully contend that, however, that the Office Action has not provided any *extrinsic* evidence that the optical recording media of Yokoyama disclose *all the features* of the claimed invention, or that persons of ordinary skill in the art would recognize that *all the*

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features of the claimed invention are present in the Yokoyama reference. See, e.g., MPEP §2131.01, Heading III citing *Continental Can Co. USA v. Monsanto Co.* 20 USPQ2d 1746 (Fed. Cir. 1991).

Yokoyama neither discloses nor suggests imposing the performance requirements of the present claims on the materials used for the optical recording medium recited in Yokoyama. Moreover, no extrinsic evidence has been presented to show or establish that the protective layers or transparent substrates of the optical recording media of Yokoyama necessarily possess the linear expansion coefficients recited in claims 10 and 14, as currently amended.

Applicants respectfully submit that the materials disclosed in the Yokoyama reference do not necessarily possess the properties of the claimed invention. As discussed in Applicants' previous response, materials described in similar general terms can and often do have quite different properties, including different linear expansion coefficients. Although the Examiner has apparently taken the view that the data provided by Applicants in the previous response "have a limited impact on the rejection at hand," Applicants point out that the Examiner continues to assume that a general disclosure of certain types of film-forming material (as in Yokoyama) inherently discloses materials meeting the limitations of the pending claims. However, in Applicants' previous response, it was shown that members of broad classes of materials (e.g., acrylic UV curable resins in that instance) can have significantly different properties, such that conclusions about the properties inherently disclosed by a broad recitation of materials cannot validly be made for all materials. Applicants respectfully contend that Yokoyama does not expressly nor inherently describe a protective film having a linear expansion coefficient of the greater than 9.5×10^{-5} (1/ $^{\circ}$ C) and smaller than 5.0×10^{-4} (1/ $^{\circ}$ C), as required by the pending claims, because such properties are *not* necessarily possessed by the material of Yokoyama. Therefore, the Yokoyama reference does not and cannot anticipate the pending claims according to the appropriate standards set forth in the MPEP for inherency rejections.

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As for the Examiner's assertion that the present specification "discloses the young's modulus and linear expansion coefficient for polycarbonate as 2.41×10^9 Pa and 6×10^{-5} (1/ $^{\circ}$ C) in the tables," Applicants respectfully point out that there are many types of polycarbonates, and the Examiner has not provided any evidence whatsoever that the materials disclosed in the Yokoyama reference necessarily possess the properties recited in the instant claims. Applicants respectfully contend that the Yokoyama reference does not and cannot inherently anticipate the pending claims.

For at least the reasons discussed herein, claims 10-16 are patentable over the Yokoyama patent.

Claims 10-16 were rejected under 35 U.S.C. §102(b) as being allegedly anticipated by Yoshioka (U.S. Patent 5,674,649). The Examiner stated (in a previous Office Action) that Yoshioka teaches a "UV cured urethane-acrylate" as a coating. This rejection is traversed.

The arguments presented above with respect to the Yokoyama reference are also applicable to the Yoshioka reference. The Yoshioka reference does not expressly disclose any linear expansion coefficient for the protective coatings therein, and there is no teaching that the materials necessarily possess all the properties recited in the pending claims. The Examiner has provided no extrinsic evidence showing that the protective coating materials of Yoshioka necessarily posses the claimed characteristics, and Applicants have shown that broad conclusions cannot be made about the allegedly inherent properties of materials such as acrylic UV curable resins (even if not identical to the material disclosed in the cited reference). Therefore, Applicants respectfully contend that the Yoshioka reference does not and cannot anticipate the pending claims according to the appropriate standards set forth in the MPEP for inherency rejections.

Claims 10-16 were rejected under 35 U.S.C. §102(b) as being allegedly anticipated by Tachibana (U.S. Patent 5,102,709). The Examiner appears to take the position that the

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Tachibana reference discloses certain materials mentioned in the present specification, and that the optical recording media of Tachibana have certain values for warpage. The examiner then asserts that the optical recording media of Tachibana meet the limitations of the present claims. This rejection is traversed.

Like the references discussed above, the Tachibana reference does not expressly disclose *any* linear expansion coefficient for the protective coatings therein, let alone a linear expansion coefficient of the protective film in the range recited in the present claims, and there is no teaching that the materials necessarily possess all the properties recited in the pending claims. The Examiner has provided no extrinsic evidence showing that the protective coating materials of Tachibana necessarily posses the claimed characteristics. To the contrary, Applicants have shown that broad conclusions cannot be made about the allegedly inherent properties of materials such as acrylic UV curable resins (even if not identical to the material disclosed in the cited reference).

Moreover, the warpage data disclosed in the Tachibana patent do not demonstrate that the optical recording media there disclosed meet the limitations of the present claims. The warp of exhibited by a particular recording medium is the result of a variety of factors, and the Examiner has not demonstrated that the observed warpage results of Tachibana are the result of, e.g., the substrate and protective film of Tachibana meeting the limitations of the present claims. Applicants respectfully contend that the Tachibana reference does not and cannot anticipate the pending claims. Reconsideration and withdrawal of the rejection is requested.

Claims 10-22 were rejected under 35 U.S.C. §103(a) as being allegedly obvious in view of Tachibana (U.S. Patent 5,102,709). The Examiner states: "It would have been obvious to use other substrate thickness disclosed as useful in these references . . . with a reasonable expectation of achieving useful optical recording medium." This rejection is traversed.

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As discussed above, Applicants contend that Tachibana does not disclose media having the specified properties of the pending claims. In view of the *silence* of Tachibana as to these properties, Applicants respectfully urge that it would not have been obvious to one of ordinary skill to modify the teachings of Tachibana to arrive at the claimed invention. There would be no motivation to modify the teachings of Tachibana as suggested by the Examiner to arrive at the claimed invention. Reconsideration and withdrawal of the rejection is requested.

Claims 10-22 were rejected under 35 U.S.C. §103(a) as being allegedly unpatentable over Tajima (EP1031972). This rejection is traversed.

The Examiner describes the Tajima reference as disclosing “optimization of linear expansion coefficient, thickness and Young’s modulus of the protective layer to offset the stresses on the other side of the dielectric layer due to the substrate to reduce warpage of the medium,” but the Examiner agrees that the reference does not disclose materials having the linear expansion coefficients recited in the pending claims. However, the Examiner states that “[I]t would have been obvious to one skilled in the art to modify the example [of Tajima] by doubling the linear expansion coefficient . . . and decreasing the thickness by nearly half to . . . maintain the same force on the side of the medium opposite the side of the substrate.” Applicants cannot agree with these statements.

As the Examiner acknowledges, the linear coefficient of expansion of the protective film of the present invention is different from, and greater than, the linear expansion coefficient disclosed in Tajima (EP1031972) (see, e.g., Table 1 of Tajima (EP1031972)). Applicants respectfully contend that the Examiner’s proposed modification of the Tajima reference appears to rely on hindsight; that is, the Examiner’s view of the Tajima reference is colored by the teachings of the instant specification. The Examiner appears to be using the teachings of the present invention as a road-map to modify the teachings of the prior art to thereby arrive at the presently-claimed invention. This is an improper hindsight rejection; see, e.g., *Grain Processing Corp. v. American Maize-Prod. Co.*, 840 F.2d 902, 907, 5 USPQ2d

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1788, 1792 (Fed. Cir. 1988). Applicants respectfully contend that, prior to the present invention, one of ordinary skill in the art would not have been motivated to make the modifications suggested by the Examiner.

Moreover, claims 11, 14, 120, and 21 recite additional limitations not taught or suggested by the Tajima reference. While the Tajima reference discloses a linear expansion coefficient with respect to temperature and to Moisture Permeation Degree, Tajima does not teach or suggest an optical data recording medium wherein an expansion coefficient under humidity of the protective film is 1.7×10^{-4} (1/%) or smaller, as required by claims 11, 14, 20 and 21. These claims are therefore patentable over the Tajima reference for at least these reasons.

As to the Examiner's remarks that "[w]ith respect to the process claims, the examiner holds that the last layer to be coated/formed would be the obvious choice for optimization," Applicants respectfully contend that the methods of making the optical recording media of the invention are not obvious, and that the methods of making such media are also not obvious.

For at least the above reasons, reconsideration and withdrawal of the rejections is proper and the same is requested.

Reconsideration and allowance of claims 10-22 is respectfully requested in view of the foregoing discussion.

Conclusion

This case is believed to be in condition for immediate allowance. Applicant respectfully requests early consideration and allowance of the subject application.

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Although no further extension are believed to be required, Applicants conditionally petition for any extension of time needed. If for any reason a fee is required, a fee paid is inadequate or credit is owed for any excess fee paid, you are hereby authorized and requested to charge Deposit Account No. **04-1105**.

Should the Examiner wish to discuss any of the amendments and/or remarks made herein, the undersigned would appreciate the opportunity to do so.

Respectfully submitted,



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